

RO 77



RO 77

EN Instructions for use



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1 Introduction

The RO 77 is used to monitor carbon monoxide (CO) levels in commercial and residential living spaces, warehouse operations, combustion engine repair facilities, public facilities and any other indoor areas where people may work or live. The full-featured, compact design of the RO 77 allows for easy use in almost any normal working environment. It is not designed for use in areas designated as “confined spaces” where other toxic gases may be present or in designated zoned areas where Intrinsic Safety products are mandatory.

Features include:

- One button ON with Auto Zero
- Measures from 0 to 999 ppm CO
- Long life CO sensor with 5 year expected life
- Captures maximum value
- Preset Alarms
- Vibrating Alarm
- Visual three colour LED
- Audible tone
- Data Hold
- Back lit display
- Battery Indication



Warning

Carbon monoxide is life threatening even at relatively low concentrations. Be sure you understand the risks before investigating potential leaks.

This monitor measures combustion gases that may be toxic in relatively low concentrations. This monitor must only be used by trained and competent persons after due consideration of all the potential hazards.

Users of portable gas monitors are recommended to conduct a “bump” check before relying on the unit to verify an atmosphere is free from hazard.

A “bump” test is a means of verifying that a monitor is working within acceptable limits by briefly exposing to a known gas mixture formulated to change the output of the sensor. (This is different from a calibration where the monitor is exposed to a known gas mixture but is allowed to settle to a steady figure and the reading adjusted to the stated gas concentration of the test gas).

A bump test can be conducted using the disposable canister of CO primarily used for checking domestic CO alarms.

2 Operating instructions

Once the monitor is switched on every accepted button press is accompanied by an audible beep.

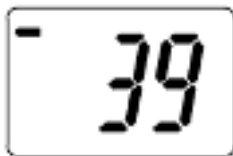
2.1 On/Off

On/Off 

The RO 77 is operated by a single button for ON and OFF. It is designed for use in ambient air, ranging in temperature from 0 to 40°C (32 to 104°F). When the unit is switched ON by pressing and holding the ON button (Only switch ON outdoors or where no CO is present), it automatically zeros in 50 seconds. During countdown the display shows time remaining as two digits.

Be sure to switch on in fresh air well away from boiler flues, vehicle exhausts, smokers and any other potential sources of CO.

2.2 Turn on countdown



The countdown starts at 50. When the countdown reaches 00 the meter will set its sensor to zero and display CO concentration using three digits. A battery level indicator will appear in the top left hand of the screen and "ppm" will appear in the bottom right hand of the screen.

2.3 Normal display

CO ppm



Hold down  for two seconds to switch meter OFF.


2.4 Backlit display


Quickly press  to toggle the backlight on or off.

Note: using the backlight reduces the battery life.

2.5 Max



Press  to display the highest reading detected while the meter is switched ON.

Press  again to display current value

2.6 Hold



Holds value when button is pressed.

Freezes the display with the CO reading at the time the HOLD button is pressed. Press again to display current value.

3 Checking for CO

Note: Ensure that the sensor grill at the front of the monitor is free from obstruction.

The RO 77 can be used to check for spillage around fires or cookers but does not replicate the functions of Appliance Sampling Probes as used in the Room CO Test procedure that forms part of CPA1.

The RO 77 should not be exposed to high temperatures (anything above 40oC) or be used directly in streams exhausting from flues.



Warning

If CO levels in a room or space exceed 30ppm it is strongly recommended that any appliances are switched off and that the space is evacuated and ventilated before anybody returns to the area.

Where CO spillage (or migration) has been detected the procedures defined for Room CO Testing as part of CPA1 should be adopted. If you are in any doubt about what to do seek expert advice. Where CO spillage (or migration) has been detected the procedures defined for Room CO Testing as part of CPA1 should be adopted. If you are in any doubt about what to do seek expert advice.

3.1 Visual indicator

The LED on the top of the RO 77 lights and changes colour when CO levels increase or decrease.

OFF:	0-1 ppm
GREEN:	2-9 ppm
AMBER:	10-29 ppm
RED:	30 ppm or higher



These values are based on environmental and health standards as listed in the table below.

Concentration of CO in Air	Inhalation Times and Toxic Symptoms*
10 ppm	The maximum allowable concentration for an 8 hour period without any known health risks according to the Department of Health and BS7967.
30 ppm	The maximum allowable concentration for competent persons to work in when investigating reports of fumes according to BS7967.
200 ppm	Mild headache, fatigue, dizziness and nausea after 2 to 3 hours.
400 ppm	Frontal headache and nausea within 1 to 2 hours. Life threatening after 3 hours.
800 ppm	Severe headache, dizziness and convulsions within 45 minutes. Unconsciousness within 2 hours. Death within 2 to 3 hours.
1,600 ppm	Headache, dizziness and nausea within 20 minutes. Death within 1 hour.
3,200 ppm	Headache, dizziness and nausea within 5 to 10 minutes. Death within 30 minutes.
6,200 ppm	Headache, dizziness and nausea within 1 to 3 minutes. Death within 10 to 15 minutes.
12,800 ppm	Death within 1 to 3 minutes.

*The effects can vary depending on size, age, sex and health. Kane is not liable for the accuracy of this information.

3.2 Audiable & vibrating alarm

An audible alarm will sound if 30 ppm CO (or greater) is detected. The alarm frequency will increase with higher concentrations. The vibrator will also vibrate. Check the LCD display for actual level. While the alarm is sounding the unit can not be turned off but will switch off if the battery is 'empty'.

The alarm functions will still operate when  and  are selected although the reading on the display will not be the current reading but the "Held" or "Max" values.

4 Battery information

Full battery indication



Lower battery indication



Do not use the monitor when the battery symbol is showing low/empty. Replace the battery immediately.

If the battery level falls to a level where the accuracy of the readings might be compromised the monitor will eventually give both audible and visual warnings before switching off.

Low battery
alarm indication



Warning

Do not ignore the warnings as your monitor will no longer be functioning and your safety may be compromised.

4.1 Replacing the battery

The battery compartment is located underneath the belt clip. To access the battery compartment the belt clip must be lifted at its pivot end and be rotated. The pivot is keyed to prevent rotation in normal use and is spring loaded.



Lift the clip at the pivot end against the spring by a few millimetres and then rotate the clip clear of the battery compartment.



Remove the battery compartment cover and replace the battery. Alkaline Duracells are recommended.

Always recycle the spent battery through an approved battery recycling scheme.

Having fitted a fresh battery, replace the cover and rotate the belt clip back to its normal position.

Always check your monitor for correct operation after replacing its battery.

5 Troubleshooting

If the display fails to stabilise at around zero within a few minutes this may indicate an expired sensor or a sensor that has been exposed to excessive levels of CO. If the symptom persists seek advice from Kane.

Always check for correct operation before each use. Use a known source of CO taking care to act in a safe manner and not to expose the RO 77 sensor to extreme temperatures or CO concentration. If the unit does not change as expected, return the unit to Kane.

If during use, you detect CO leaks, be sure you know the appropriate actions to take to protect yourself and others. Before switching off the monitor always expose it to fresh air until the reading falls below 5 ppm. Note that the readings fall much more slowly than they rise so you may need to wait some minutes.

6 Specifications

Range	0-999 ppm
Resolution	1 ppm
Accuracy	± 3 ppm 0 to 100 ppm ¹ $\pm 5\%$ reading > 101 ppm \pm
Audible alarm	Preset at 30 ppm
Visual alarm	LCD and LED
Battery	9V alkaline
Battery life ²	Up to 250 hours using Duracall Procell
Ambient temperature	0-40°C (32-104°F)
Warranty	1 year

¹ As per EN 50543 : 2011

² Based on 'normal' use without backlight or alarms

No user serviceable parts.

Re-calibrate every 12 months.

Check for correct operation as described in this manual before every use.

7 Cleaning

This product can be cleaned using a damp lint free cloth and a small amount of non-abrasive detergent. Take care to avoid moisture entering the sensor's grill and after cleaning leave the product in a warm dry place to allow any surface dampness to evaporate. Under no circumstance should any solvent cleaner be used as this may cause damage to the plastic case, display and sensor.

8 Cold weather precautions

It is important you keep your product in a warm place overnight

Electronic devices that become really cold, by being left in a vehicle overnight, suffer when taken into a warm room the next morning. Condensation may form which can affect the product's performance & cause permanent damage

Electrochemical sensors can be affected by condensation or water.

If you think that your product is affected by condensation or water ingress, it may be possible to rectify the problem yourself. Simply leave the product running in a warm place for a few hours (use mains adapter/battery charger if needed). If, after doing this, you still experience problems please contact our Customer Service centres.

9 Electromagnetic compatibility

European Council Directive 89/336/EEC requires electronic equipment not to generate electromagnetic disturbances exceeding defined levels and have adequate immunity levels for normal operation. Specific standards applicable to this meter are stated below.

As there are electrical products in use pre-dating this Directive, they may emit excess electromagnetic radiation levels and, occasionally, it may be appropriate to check the meter before use by:

Use the normal start up sequence in the location where the meter will be used.

Switch on all localized electrical equipment capable of causing interference.

Check all readings are as expected. A level of disturbance is acceptable.

If not acceptable, adjust the meter's position to minimize interference or switch off, if possible, the offending equipment during your test.

At the time of writing this manual (February 2012) Kane International Ltd are not aware of any field based situation where such interference has occurred and this advice is only given to satisfy the requirements of the Directive.

This product has been tested for compliance with the following generic standards:

EN 61000-6-3 : 2011
EN 61000-6-1 : 2007



and is certified to be compliant

Specification EC/EMC/KI/RO 77/1 details the specific test configuration, performance and conditions of use.

4

Register your RO 77



Register your RO 77 to create your

KAM dashboard:

- ★ Simple online booking on www.kane.co.uk
- ★ Automatic reminder when due for recertification
- ★ FREE POSTAGE returning your Rothenberger analyser
- ★ SAME DAY annual FGA recertification OR YOUR MONEY BACK*



Please **register** your RO 77 at www.kane.co.uk

PLEASE READ ALL SAFETY WARNINGS IN THE MANUAL



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